Kingston Technology Data Silo® DS50

External SCSI Expansion Chassis User's Guide

DS50 Data Silo®

External SCSI Expansion Chassis

User's Guide

Part No. D89-0000-0008 B00

November 1997



Kingston Technology Company 17580 Newhope Street Fountain Valley, CA 92708-9885 Phone (714) 438-1850 Fax (714) 438-1847

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C ∈ Declaration of Conformity

Company's Name: Kingston Technology Company

Storage Products Division

Company's Address: 17580 Newhope Street

Fountain Valley, CA 92708

Manufacturer's Address: 17580 Newhope Street

Fountain Valley, CA 92708

Product Name: Data Silo DS50

Model Number: DS50-SXXX

Conforms to the following specifications:

Safety Agencies: Safety Tests:

CSA "Certified" CAN/CSA-C22.2 No950-93 LR90843-3 UL 1950 E129724

TÜV "GS License" EN 60950/06.88 S 9272828

EN 60950 A1/08.90 EN 60950 A2/10.91

Safety Directive: 73/23/EEC low voltage

EMC Tests:

EN 50081-1:1992 for Generic Emission CISPR22:1995/EN 55022:1987 Class B EN 50082-1:1992 for Generic Immunity

IEC 1000-4-2:1994 ESD

IEC 1000-4-3:1994 Radiated EM Field IEC 1000-4-4:1994 Fast Transient/Burst

EMC Directive: 89/336/EEC

FCC Part 15. Class B

Year of Manufacture: 1997

Signature:______
Full name: Dieter Paul

Position: Vice President of Engineering

License #:

NOTICE: This User's Guide is subject to periodic updates without notice. Please check Kingston's website at http://www.kingston.com or contact your Kingston representative for the latest revision of this document.

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Data Silo® DS50

Packaging Materials

The Kingston Technology Data Silo® external expansion chassis is shipped in a container designed to provide protection and prevent damage during shipment. The Data Silo was carefully inspected before and during the packing procedure at the factory. Evidence of any damage to the Data Silo should be reported to the shipper immediately.

If the wrong Data Silo model has been received, please call Kingston's Storage Product Division at (800) 435-0642. A staff member will give you a Return Material Authorization (RMA) number to facilitate processing. Kingston cannot accept returns which do not display an RMA number on the outside of the package. Return the unit with all the original packing materials.

Before removing any component from its packaging, discharge any static electricity by touching a properly grounded metal object.

Serial Number

The Data Silo is labeled with a serial number. This number must be reported to the Kingston Customer Service Representative in order to receive a Return Material Authorization (RMA) for warranty claims. Locate the serial number label and record the number in the space provided below.

Data Silo Serial Number:	

General Description

The Kingston Technology **Data Silo® DS50** series of stand-alone expansion chassis provide rugged and reliable housing for 3.5 inch half-height SCSI storage devices.

The Data Silo DS50 is available in single and dual bay configurations (Figure 1). Each chassis is constructed of rugged steel and is equipped with an auto-ranging power supply, power-on LED, highly-rated cooling fan, and all necessary internal wiring and mounting hardware. Removable front filler panel(s) facilitate the mounting of either fixed or removable media devices.

The Data Silo is available with 50-pin SCSI 2 or 68-pin SCSI 3 interfaces. Both Data Silo models come with externally mounted SCSI ID selection switch(es) for easy unit ID selection.

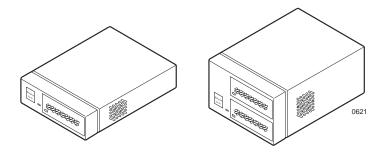
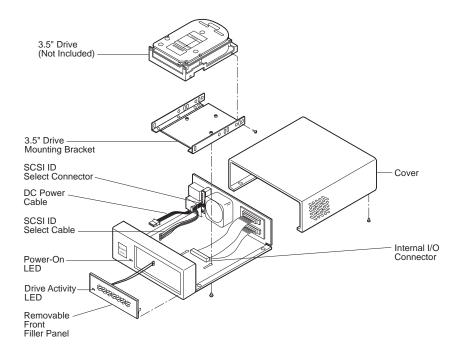


Figure 1: Data Silo DS50 Family

This User's Guide describes the steps required for installing drive(s) into the Data Silo DS50 external expansion chassis. The illustrations and instructions contained in this manual are generally representative of all Data Silo DS50 models. Your Data Silo may differ slightly from the illustrations shown. Although each Data Silo model contains different drive bay or I/O interface configurations, the installation process is basically the same for all models.

This guide is intended to supplement documentation provided with the host computer system, the operating system, and the drive to be installed within the Data Silo. Figure 2 below illustrates a typical drive installation into a Data Silo DS50 external expansion chassis.



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Figure 2: Data Silo DS50 Drive Installation Overview

Data Silo Front Panel

(See Figure 3)

 Chassis power LED - Indicates that power is being supplied to the Data Silo chassis.

- Removable Filler Panel(s) Accomodate removable media devices
- Drive Activity Indicator Provides a visual indication of drive activity. This LED is
 housed in the removable filler panel(s) and provides connectors which can easily be
 attached to the installed drive(s) within the Data Silo chassis.

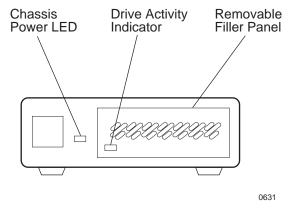


Figure 3: Data Silo Front Panel (DS50 1-Bay Shown)

Data Silo Rear Panel

(See Figure 4)

 SCSI ID Select Switch(es) - Located on the back panel, these switches provide SCSI ID selection. The Data Silo uses two (2) different style switches; a rotating switch and a push button type switch. Refer to "Selecting the SCSI ID Number" for additional information.

- Power Switch Provides power to the Data Silo chassis.
- A/C Connector Accepts U.S. and other available international standard power cables. Refer to Appendix C for more information.
- I/O Interface Connectors The Data Silo is available with 50-pin SCSI 2 MM or 68-pin SCSI 3 Wide interface connections.

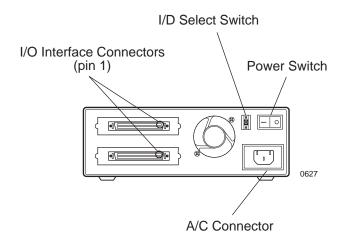


Figure 4: Data Silo Rear Panel (DS50 1-Bay Shown)

DATA SILO INSTALLATION

Installing the Drive(s) into the Data Silo

While performing the steps in this section, work on a soft surface to prevent excessive shock to the drive(s) being installed. Also refer to the manufacturer's documentation provided with the drive(s). A #2 Phillips and a flat blade screwdriver will be required during this procedure.

Removing the DS50 Cover

WARNING: Remove all power from the Data Silo before removing the cover. The Data Silo contains NO USER SERVICEABLE PARTS inside the unit.

- Unplug the Data Silo and verify that all cables have been disconnected.
- Turn the Data Silo over and place it on a soft clean surface, so that the bottom is facing upward.
- 3. Loosen the four (4) screws located on the bottom of the unit (Figure 5).
- 4. Place the Data Silo in an upright position so that it rests on its four rubber feet.
- 5. Carefully slide the cover rearward off the chassis.

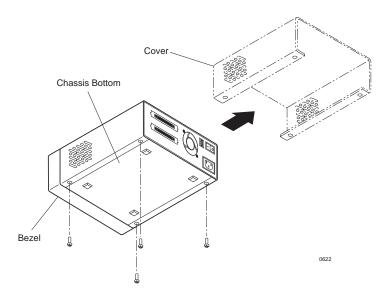


Figure 5: Removing the Cover (1-Bay Shown)

Drive Preparation

- Remove the drive from its protective packaging.
- 2. **Plastic Drive Bezel** If installing a hard drive which is equipped with a plastic front bezel, remove the drive bezel.
- SCSI Drive Termination Disable SCSI termination from the drive. Refer to the
 documentation provided by the drive manufacturer for the location of these
 terminators or jumpers. Termination is provided by an external terminator on the
 Data Silo rear panel. External active termination is recommended for best SCSI
 performance (terminator not included with the Data Silo).
- SCSI Drive ID Select Jumpers Locate the SCSI ID select jumper pins on the drive, and remove any jumpers on these pins. The Data Silo SCSI ID cable will be attached to these pins on each drive (Figures 6 and 7).
- 5. SCSI ID Cable Each Data Silo is supplied with one SCSI ID select cable per drive bay. The ID cable permits external unit ID selection via a small switch located on the rear panel of the Data Silo (Figure 4). One end of this cable attaches to the drive SCSI ID pins and the other end attaches to the Data Silo unit ID select switch. One end of this cable has a single connector with 1.25mm pin spacing. The other end contains individual 2mm connectors. This cable can be used with drives that have either 2mm or 1.25mm pin configurations by simply reversing the cable. The Data Silo unit select switch contains connectors that except either end of this cable.

NOTE: Depending upon the model, the Data Silo uses one of two different types of SCSI ID select switches. The first type of switch utilizes a single connector with .1" pin spacing and has a matching SCSI ID cable designed to attach to 2mm drive pins. The other type of SCSI ID switch has 2 connectors with a reversing SCSI ID cable that will allow either end of the cable to be attached to the drive. The second type of switch will attach to either 2mm or 1.25mm drive pins (Figures 6 and 7).

IF INSTALLING AN 8-BIT SCSI DEVICE:

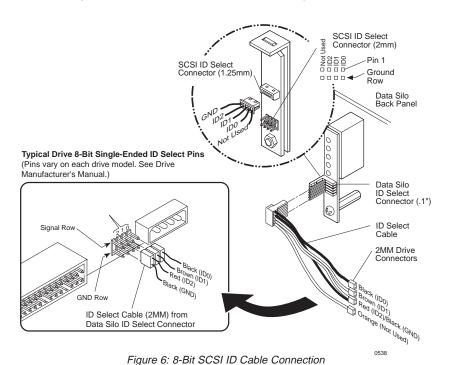
The unit ID cable contains **black**, **brown**, **red/black**, and **orange** wires. Attach three (3) connectors from the SCSI ID select cable to the appropriate 2mm drive pins (Figure 6). The fourth (orange) wire is not used for the 8-bit installation.

The single **black** wire plugs into the drive pin used to select ID0, the **brown** wire plugs into the drive pin for ID1, the **red/black** wire plugs into the drive pin for ID2. The **orange** wire is not used for this interface.

In most cases, the drive manufacturer labels each pair of SCSI ID select pins in significant bit order (0, 1 and 2). One row of drive pins is the signal row, and one row is designated for ground. Refer to the drive manufacturer's documentation for specific pin configurations.

The Data Silo ID select cable provides 2mm, 2-conductor drive connectors. A single wire attaches to one side of each connector (with the exception of the red/black connector). The cable side of each connector must align with the signal pin on the drive. On the red/black connector, the red wire aligns with the signal pin on the drive and the black wire aligns with the ground pin.

NOTE: Some versions of the Data Silo have a reversible ID select cable. This cable may be attached to either 2mm or 1.25mm drive pins.



IF INSTALLING A 16-BIT SCSI DEVICE:

The unit ID cable contains **black**, **brown**, **red/black**, **and orange** wires. Attach four (4) connectors from the SCSI ID select cable to the appropriate 2mm drive pins (Figure 7).

The single **black** wire plugs into the drive pin used to select ID0, the **brown** wire plugs into the drive pin for ID1, the **red/black** wire plugs into the drive pin for ID2 and the **orange** wire plugs into the drive pin to select ID3.

In most cases, the drive manufacturer labels each pair of SCSI ID select pins in significant bit order (0, 1 and 2). One row of drive pins is the signal row, and one row is designated for ground. Refer to the drive manufacturer's documentation for specific pin configurations.

The Data Silo ID select cable provides 2mm, 2-conductor drive connectors. A single wire attaches to one side of each connector (with the exception of the red/black connector). The cable side of each connector must align with the signal pin on the drive. On the red/black connector, the red wire aligns with the signal pin on the drive and the black wire aligns with the ground pin.

NOTE: Some versions of the Data Silo have a reversible ID select cable. This cable may be attached to either 2mm or 1.25mm drive pins.

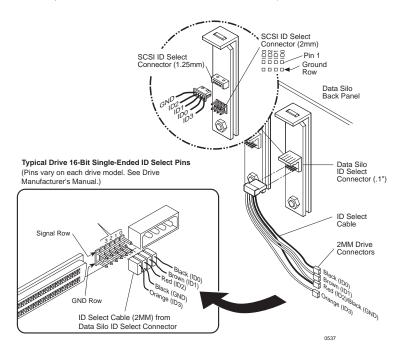


Figure 7: 16-Bit SCSI ID Cable Connection

6. If installing removable media devices, remove the appropriate filler panels from the DS50. The filler panel(s) may be removed by gently prying with the tip of a flat blade screwdriver as shown in Figure 8. If installing fixed media device(s), leave the filler panel(s) in place.

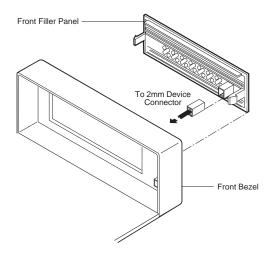


Figure 8: Removing the Filler Panel

Drive Installation

Removal of the drive mounting bracket from the DS50 chassis is required in order to fasten the drive(s) into the bracket. The entire drive/bracket assembly can then be reinstalled into the DS50 chassis.

- Turn the Data Silo over and place it on a soft clean surface, so that the bottom is facing upward.
- Loosen but do not remove the three (3) screws that secure the drive mounting bracket to the Data Silo chassis (Figure 9).
- 3. Place the Data Silo in an upright position so that it rests on its four rubber feet.
- 4. Remove the drive mounting bracket from the chassis by sliding it toward the chassis back panel, then lifting upward (Figure 10).

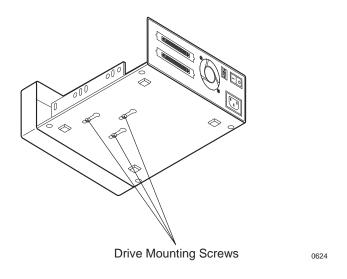


Figure 9: Loosen the Drive Mounting Bracket Screws (DS50 1-Bay Shown)

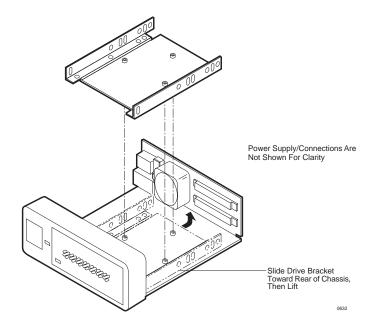


Figure 10: Removing the Drive Mounting Bracket (DS50 1-Bay Shown)

5. Attach the drive activity LED cables to the appropriate drive pins. Refer to the device manufacturer's documentation for the location of these pins.

- 6. Install the drive(s) into the drive mounting bracket using four (4) 6-32 x 1/4" screws (Figure 11). Do not fully tighten the screws on removable media devices.
- **NOTE:** Do not fully tighten the screws that fasten removable media devices into the drive mounting bracket at this point. The screws will be tightened after the drive bezel clearance has been checked with the DS50 bezel clearance.
- 7. After the drive(s) have been positioned into the mounting bracket, carefully insert the bracket back into the Data Silo chassis. Be careful that no cables are pinched. Position the screws on the bottom of the mounting bracket through the slots on the bottom of the Data Silo chassis so that the bracket can slide freely. Do not tighten the drive mounting bracket screws at this point.
- 8. Slide the drive mounting bracket as far as it will go toward the front of the Data Silo chassis to allow access for attaching cables at the rear of the Data Silo.
- Connect the I/O interface cable(s) to the drive(s). Verify that the pin 1 indicator on the cable is properly aligned. Refer to the drive manufacturer's documentation for more information.
- 10. Connect the 4-pin DC power cable(s) from the Data Silo to the drive(s).
- 11. Connect the ID select cable to the ID select interface connector on the rear panel of the Data Silo as shown in Figures 6 and 7.
- **NOTE:** Use the provided tie wraps included in the installation kit to prevent the power and ID select cables from possible fan contact.
- 12. If necessary, reinstall the Data Silo cover to check for proper drive bezel/cover alignment and make any necessary adjustments.
- NOTE: Fixed media devices should be mounted rearward in the mounting bracket to allow sufficient bezel clearance, while removable media drives should be mounted forward in the bracket so that the drive bezel aligns with the DS50 bezel (Figure 12).
- Tighten the screws that fasten any removable media device(s) into the mounting bracket.
- 14. Tighten the screws that fasten the drive mounting bracket to the chassis.
- 16. Reinstall the Data Silo cover and fasten all screws.
- 17. Connect the power cable to the Data Silo and turn on the power switch. Should there be any unusual sound, turn the Data Silo off immediately, disconnect the power cable, and remove the cover to locate the source of the problem. Verify that the power and ID select cables are securely fastened with the provided tie wraps and are not contacting the fan. Replace the cover.

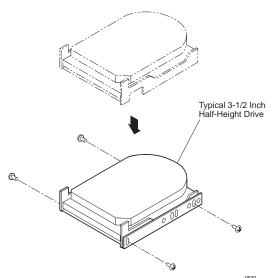


Figure 11: Installing the Drive into the Drive Mounting Bracket

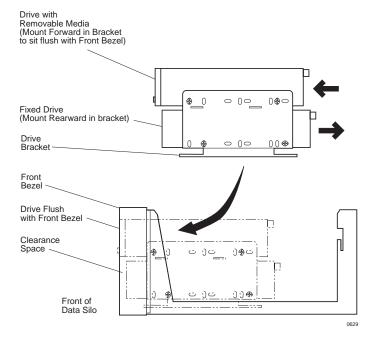


Figure 12: Adjusting the Drive Clearance (DS50 2-Bay)

Connecting the Data Silo to the Computer System

If the DS50 is the last device in a SCSI daisy-chain, it will require the appropriate termination (Figure 13). Refer to Appendix C for available terminators.

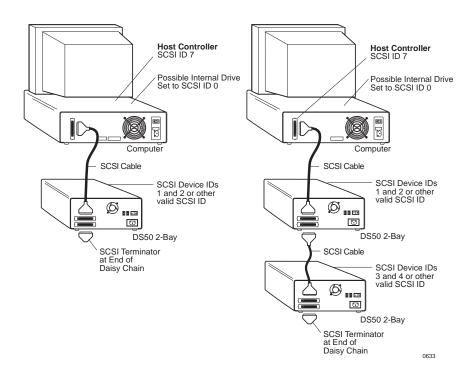


Figure 13: Typical Daisy-Chain Connections

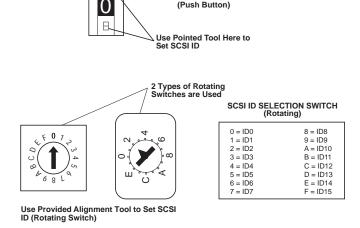
Selecting the SCSI ID Number

The SCSI ID is an address number (0 through 7 for 8-bit protocol and 0 through 15 for 16-bit protocol) that is assigned to each SCSI device. In a SCSI daisy-chain, each device in the chain must have a unique SCSI ID number. SCSI ID 7 is usually reserved for the host controller. If the computer system is already equipped with internal or external SCSI storage devices, some ID numbers will already be reserved. For instance, if the computer system came with an internal SCSI hard drive, it may be designated as SCSI device 0. Refer to the computer system documentation for additional information.

The Data Silo SCSI ID selection switch(es) is located on the rear panel of the chassis enclosure (Figure 14). Depending upon the Data Silo model and interface, there are three (3) different SCSI selection switches available. Two types of rotating switches that can be adjusted with the provided adjustment tool. The other switch has a push button selector that can be adjusted with the tip of a pen or straightened paper clip.

Carefully select the appropriate SCSI ID number(s) for the installed devices(s). Note that some switch settings may be invalid for your interface type. Selecting an invalid ID number, or selecting the same number on different devices may cause unpredictable results and the computer system may not recognize the installed device(s). If the computer system can not recognize the boot disk, the computer system may fail to properly start-up.

SCSI ID SELECTION SWITCH



Some SCSI unit ID numbers on the selection switches may be invalid for your interface type. Valid 8-bit ID numbers include 0-7. Valid 16-bit ID numbers include 0-15 (Do not use ID7. It is usually reserved for the host).

Figure 14: SCSI ID Selection Switches

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Appendices

Appendix A - Specifications/Dimensions

SCSI Data Silo chassis conform to the Small Computer Systems Interface (SCSI) Standard set by the American National Standards Institute (ANSI).

Environmental Specifications		
	Operating	Storage
Ambient Temperature	-5° C to 50° C	-45° C to 75° C
Relative Humidity (1)	10% to 80%	10% to 90%
Altitude	-1000 to 50,000 ft	-1000 to 50,000 ft
	-304m to 15240m	-304m to 15240m
Shock (2)	10g	60g

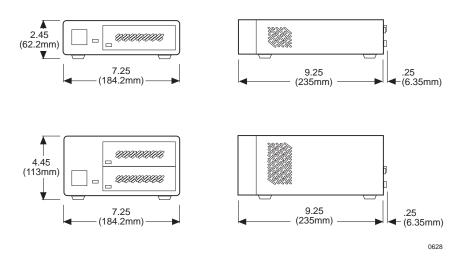
⁽¹⁾Non-condensing with maximum Gradient of 10% per hour.

⁽²⁾¹¹ msec Pulse Width 1/2 Sine Wave.

Physical Specifications	DS50 1-Bay	DS50 2-Bay
Height	2.45" (62.2mm)	4.45" (113mm)
Width	7.25" (184.2mm)	7.25" (184.2mm)
Drive Mounting Depth	7.75" (196.9mm)	7.75" (196.9mm)
Weight	3.0lb. (1.36kg)	3.8lb (1.73kg)

Chassis Reliability/Maintainability		
MTBF	500,000 Hours	
MTTR	5 Minutes	
Preventive		
Maintenance	None	

Electrical	DS50 1-Bay	DS50 2-Bay
Input	90-260 VAC, Auto Select, 47-440Hz	90-260 VAC, Auto Select, 47-440Hz
Output	30 watts	65 watts

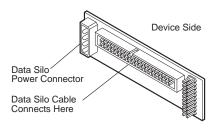


Dimensions are for reference only

Figure A-1: Data Silo Physical Dimensions

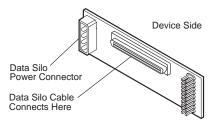
Appendix B - Drive Interface Adapter Options

Kingston provides several drive interface adapter options that permit various Data Silo/drive connector combinations. Contact Kingston for additional ordering information.



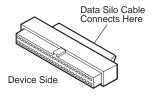
DX100-SNC

Adapts 8-bit, 50-pin SCSI cable connector to Single Connect (SCA-2) drive interface connector (includes power, ID selection and device activity connections).



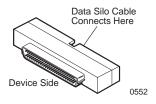
DX100-SWC

Adapts 16-bit, 68-pin SCSI cable connector to Single Connect (SCA-2) drive interface connector (includes power, ID selection and device activity connections).



DX100-NTW

Adapts 8-bit, 50-pin device to 16-bit, 68-pin Wide SCSI cable connector

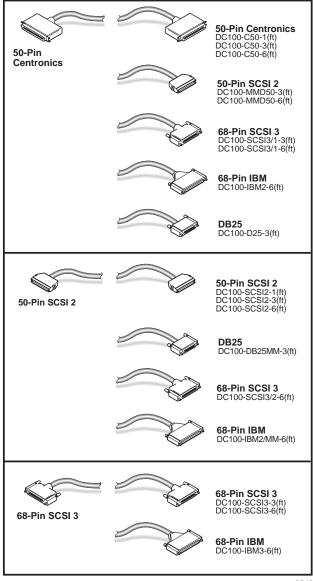


DX100-WTN

Adapts 16-bit, 68-pin Wide device to 8-bit, 50-pin SCSI cable connector

Appendix C - Cables, Connectors and Terminators

Table C-1: External Cables



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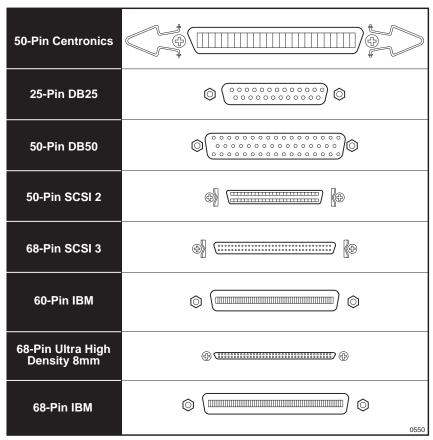
Table C-2: International Power Cables

Model Number	Country	Cable Type
DC100-US	United States	
DC100-CE	Continental Europe	
DC100-UK	United Kingdom	
DC100-SW	Switzerland	
DC100-IT	Italy	
DC100-AZ	Australia/New Zealand	

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The Data Silo DS50 ships with one (1) power cable per chassis. Please specify the appropriate part number if ordering non-U.S. cables.

Table C-3: System Connectors



Not all connector types supported by DS50 (For reference only).

Terminator Part Number 8-bit Centronics SCSI 1 (50-Pin) DX100-S-TA Terminator I/O Connector 8-bit Microminiature SCSI 2 (50-Pin) Active Single-Ended DX100-S2-TA (4) **Forced Perfect** DX100-S2-FPT Differential DX100-S2-DIF Terminator I/O Connector 16-Bit Wide SCSI 3 (68-Pin) Active Single-Ended DX100-S3-TA Differential DX100-S3-DIF Terminator 0 I/O Connector

Table C-4: Terminators

Reader's Comments 2

READER'S COMMENTS

Please take a few moments when your computer system is up and running to send us your ideas and suggestions for improving our products and documentation. Did the installation go smoothly for you? Are there any changes you would like us to make, either with the hardware itself, or with the installation instructions? Everyone at Kingston Technology is working toward the goal of providing you with the highest quality, most cost effective, products available on the market, and we need your comments to guide our efforts. We look forward to hearing from you soon!

	Date:
Your Name:	·
Address:	
Telephone:	()

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26 Reader's Comments

